

A NEW SPECIES OF *PORRICONDYLA* (DIPTERA: CECIDOMYIIDAE) FROM
SOUTHWESTERN PENNSYLVANIA

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Abstract.—A species new to science, *Porricondyla recondita* Plakidas (Diptera: Cecidomyiidae: Porricondylinae), is described and illustrated. The larva of this new species is noteworthy in that it lacks a spatula but has an analogous structure on the dorsum of the prothorax, a prothoracic collar, possibly used for tunneling through substrate. The prothoracic collar is unique among Porricondylinae.

Key Words: Cecidomyiidae, *Porricondyla*, gall midges, prothoracic collar

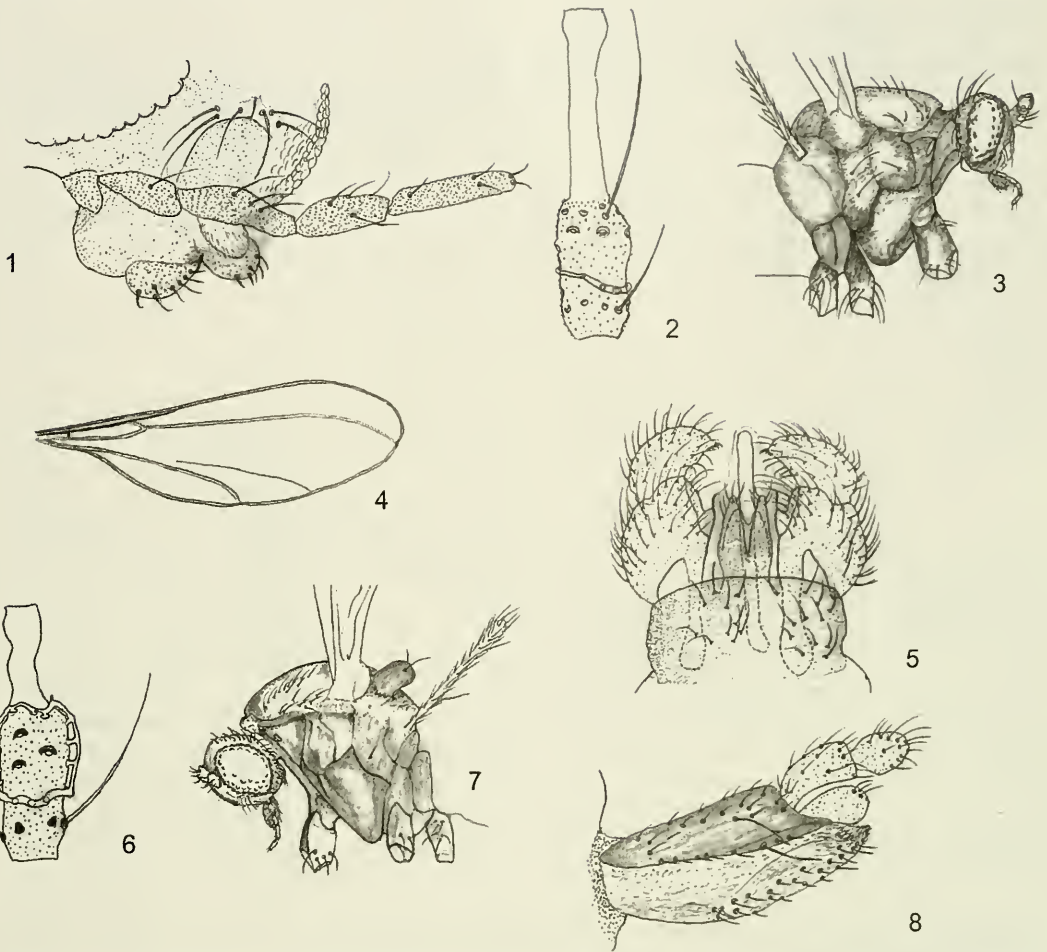
Porricondylinae are a subfamily of gall midges whose larvae feed exclusively on fungal mycelium (Mamaev and Krivosheina 1965, Plakidas 1999). The decay habitats in which they live include soil, leaf litter, fallen trees, aborted flower buds, shelf fungi and any other long-lived decaying substrates where fungi can proliferate. Recent publications (Spungis 1981, 1985, 1987, 1989, 1992, 2002; Dallai et al. 1996; Gagné 2004) are useful in understanding the biology and systematics of the Porricondylinae.

Larvae of the new species, *Porricondyla recondita* Plakidas, were found feeding in brown-rot decay beneath loose bark of a fallen red maple tree. The causative agents of brown-rot are fungi capable of utilizing cellulose and leaving behind lignin which is brown in color (Pugh 1980, Richards 1974). These larvae are believed to feed on the mycelial growth produced by the brown rotting fungus growing on the decaying wood. Fifteen larvae, presumed to be siblings, were collected in all. Of these, three were slide mounted and the remainder were cultured in plastic petri dishes moistened with paper towels. Three males and three females were reared and slide mounted in euparal.

Porricondyla recondita Plakidas,
new species
(Figs. 1–13)

Adult.—*Color:* Eyes black; antenna slate gray; thorax and abdomen brown; legs brown, covered with black setiform scales; wings hyaline, fringed with black hairs.

Male: Head: Palpiger + 4-segmented palpus (Fig. 1), labellum with setae distally, eye bridge lacking, frons with 3–4 setae per side (Fig. 1). *Antenna:* Scape, pedicel and 14-flagellomeres, circumfila on all flagellomeres consisting of a single loop (Fig. 2). *Thorax* (Fig. 3): Dorsocentral and dorsolateral setae present. Katepisternum bare, anepisternum with one seta, anepimeron with 2 or 3 setae. *Legs:* Tarsal claws on all legs with a basal tooth, empodium rudimentary. *Wing* (Fig. 4): Length 2 mm, CuA₂ vein to wing margin, CuA₁ vein absent. *Abdomen:* Tergites 1–8 and sternites 2–8 lightly sclerotized. *Genitalia* (Fig 5): Cercus long, narrow, tapering to pointed apex; gonocoxites and gonostyli covered with setae and setulae, apical inner margin of gonostyli with 5–7 sclerotized teeth. Gonocoxal apodemes extending to anterior margin of ninth tergite. Aedeagus longer



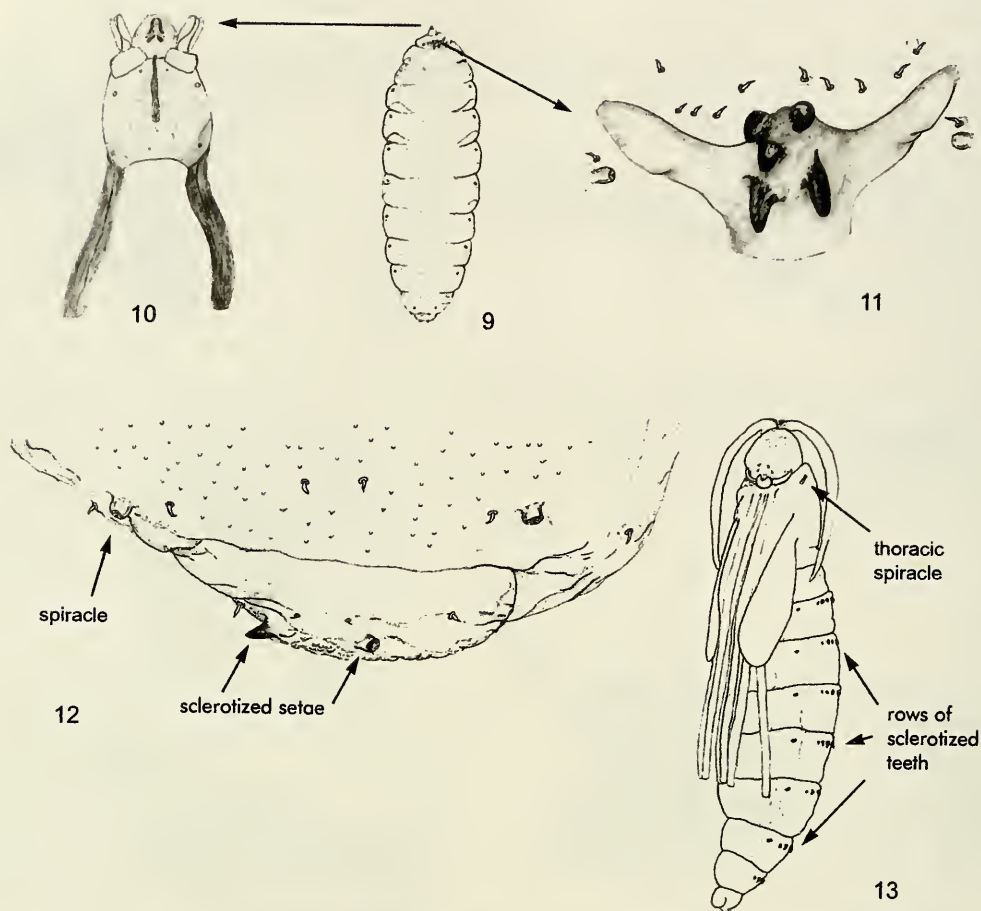
Figs. 1–8. *Porricondyla recondita*. 1, Palpus. 2, Male 3rd flagellomere. 3, Male thorax, lateral. 4, Wing. 5, Male genitalia. 6, Female 3rd flagellomere. 7, Female thorax, lateral. 8, Female abdomen, segments 9–10.

than gonostyli; parameres lightly sclerotized basally and fused apically forming a shield (tegmen) ventrad to aedeagus.

Female: *Head:* Palpiger + 4-segmented palpus, labellum with setae distally, eye bridge lacking, frons with 2–3 setae per side. *Antenna:* Scape, pedicel and 12-flagellomeres, circumfila on all flagellomeres consisting of two interconnected loops (Fig. 6). *Thorax* (Fig. 7): Dorsolateral and dorsocentral setae present; anepisternum and katepisternum bare; anepimeron with a single seta. *Legs:* Tarsal claws on all legs with a basal tooth, empodium rudimentary. *Wing:* As in male. *Abdomen:* Tergites 1–6

and sternites 2–6 lightly sclerotized; segments 7 and 8 membranous, protrusible. Ninth and 10th abdominal segments (Fig. 8): 9th tergite lightly sclerotized with dorsal and lateral setae; 9th sternite membranous with setae posteriorly and densely covered with setae situated at anterior margin; cercus 2-segmented, covered with setae and setulae, first segment rectangular, second segment ovoid and shorter than first; hypoproct ovoid, situated below cerci, covered with setulae and with a few setae distally. Spermathecae membranous, not visible on slide-mounted cleared or uncleared specimens.

Larva (Fig. 9).—Length 3 mm, tawny or-



Figs. 9–13. *Porricondyla recondita*. 9, Larva, dorsal. 10, Head capsule, dorsal. 11, Prothoracic collar. 12, 8th & 9th abdominal segments, dorsal. 13, Pupa, ventrolateral.

ange, cylindrical. *Head* (Fig. 10): Dark brown with elongate posterior apodemes, antenna longer than wide, with a minute papilla situated distally and with sclerotized basal collar; spatula absent. *Thorax*: Segments ventrally with 4 groups of 3 lateral papillae, 1 of each group with seta and 2 without setae. Sclerotized collar (Fig. 11) situated on dorsal surface of prothorax between and extending laterally just beyond thoracic spiracles comprising 5 centrally located tooth-like processes. Six dorsal papillae present, each with a coniform seta anterior to collar and at least 2 pleural coniform setae situated at each posterior edge of prothorax. *Abdomen*: Segments 1–7 with 6 dorsal and 2 pleural papillae each

with a short seta. Spinule fields situated on dorsal and ventral anterior margin of meso- and metathorax and all abdominal segments. Anterior ventral papillae on the first 7 abdominal segments situated inside spinule fields near posterior margin. Spiracles on 8th abdominal segment situated near dorsal posterior margin and elevated above body wall (Fig. 12). Four setiform dorsal papillae situated between spiracles. Terminal segment shorter than 8th; 3 simple anal papillae situated on either side of anal pore; dorsal surface with 8 terminal papillae, 3 pair setiform, 1 pair large, pigmented, coniform, hooklike (Fig. 12).

Pupa (Fig. 13).—Illustrated from a female pupal skin. Head with sclerotized an-

tenal horns situated on apical inner margin of antennal sheaths; face with 2 pairs of minute setiform papillae anterior to clypeal sheath; thoracic spiracle elongate, blunt; abdomen 9-segmented; cuticle covered with spicules; spiracles situated on lateral margins of segments 2–7; a single row of sclerotized teeth situated on dorsal anterior margin of segments 2–8; last segment bilobate.

Types.—Holotype, male, Pennsylvania, Allegheny Co., 15 km NE Pittsburgh, emerged 15 May 2000; allotype female and pupal skin, same data as holotype; paratype larva same pertinent data as holotype. All deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC. Other specimens: 2 larvae, 2 males and 1 female all slide mounted, in the author's collection.

Etymology.—The specific name, *recondita*, means hidden, and refers to the cryptic life of the larva.

Discussion.—Using the key from Parnell (1971) males key to couplet 4 and superficially resemble *P. unidentata*, but with three specific differences. *Porricondyla recondita* lacks heavily pigmented parameres in the male genitalia, the CUA₁ vein is absent, and the apical margin of the gonostyli has 5–7 teeth, whereas *P. unidentata* has heavily pigmented parameres, has the CUA₁ vein present, and the apical margin of the gonostyli has 2–3 teeth. Females of *P. recondita* differ from all other females with the CUA₁ vein absent, 12 flagellomeres all with circumfila and the spermathecae unpigmented. The larva, which lacks a spatula, has a heavily sclerotized prothoracic dorsal collar, a condition unique in the Porricondylinae. Only one other genus, *Ledomyia* (Cecidomyiinae), has larvae with a dorsal collar (Gagné 1985, Larew et al. 1987). In *Ledomyia* the dorsal collar is similar in appearance to that of *P. recondita*. However, differences do occur between larvae of the two genera. All *Ledomyia* larvae possess a spatula and have 2 setiform papillae between the spiracles on the 8th abdominal segment. *Porricondyla*

recondita larvae lack a spatula and have 4 setiform papillae between the spiracles, the latter being a subfamily characteristic.

ACKNOWLEDGMENTS

I am grateful to Dr. R. J. Gagné Research Entomologist, Emeritus, Systematic Entomology Laboratory, USDA, for his helpful comments which improved the quality of this paper. I also thank Dr. Voldemars Spungis, Faculty of the Department of Zoology and Animal Ecology, University of Latvia, who reviewed and made helpful comments on the first draft of this paper.

LITERATURE CITED

- Dallai, R., P. Lupetti, F. Frati, B. M. Mamaev, and B. A. Afzelius. 1996. Characteristics of sperm ultrastructure in the gall midges Porricondylinae (Insecta, Diptera, Cecidomyiidae), with phylogenetic considerations on the subfamily. *Zoomorphology* 116: 85–94.
- Gagné, R. J. 1985. Descriptions of new Nearctic Cecidomyiidae (Diptera) that live in xylem vessels of fresh-cut wood, and a review of *Ledomyia* (s.str). *Proceedings of the Entomological Society of Washington* 87: 116–134.
- . 2004. A Catalog of the Cecidomyiidae (Diptera) of the World. *Memoirs of the Entomological Society of Washington* No. 25, 408 pp.
- Larew, H. G., R. J. Gagné, and A. Y. Rossman. 1987. Fungal gall caused by a new species of *Ledomyia* (Diptera: Cecidomyiidae) on *Xylaria enterogena* (Ascomycetes: Xylariaceae). *Annals of the Entomological Society of America* 80: 502–507.
- Mamaev, B. M. and N. P. Krivosheina. 1965. The Larvae of the Gall Midges. ix + 293 pp. (English translation, 1973. A.A. Balkema Publishers, Brookfield, Vermont.)
- Parnell, J. R. 1971. A revision of the Nearctic Porricondylinae (Diptera: Cecidomyiidae) based largely on an examination of the Felt types. *Miscellaneous Publications, Entomological Society of America* 7: 275–348.
- Plakidas, J. D. 1999. Identification of the North American Porricondylinae Larvae (Diptera: Cecidomyiidae). *Loyalfield Publishing, Pittsburgh, Pennsylvania*, 129 pp.
- Pugh, G. J. E. 1980. Strategies in fungal ecology. *Transactions of the British Mycological Society* 75: 1–14.
- Richards, B. N. 1974. *Introduction to the Soil Ecosystem*. Longman, Harlow, Essex.
- Spungis, V. 1981. New species of gall midges from the tribes Oligotrophini and Porricondylini. *Latvijas*

- Entomologs 24: 43–55. (In Russian with English summary.)
- . 1985. Gall midges of the subtribe Diallactina (Diptera: Cecidomyiidae) in Latvia. *Latvijas Entomologs* 28: 38–53. (In Russian with English summary.)
- . 1987. Gall midges of the subtribe Dicerurina (Diptera: Cecidomyiidae) in Latvia. *Latvijas Entomologs* 30: 15–42. (In Russian with English summary.)
- . 1989. A revision of the European gall midge species of the genus *Camptomyia* Kieffer (Diptera: Cecidomyiidae). *Latvijas Entomologs* 32: 54–74. (In Russian with English summary.)
- . 1992. A revision of the European gall midges of the tribe Winnertziini. *Latvijas Entomologs Supplementum* V, 39 pp.
- . 2002. A check-list of Latvian Porricondylinae (Diptera: Cecidomyiidae) with notes on new records. *Latvijas Entomologs* 39: 56–60.